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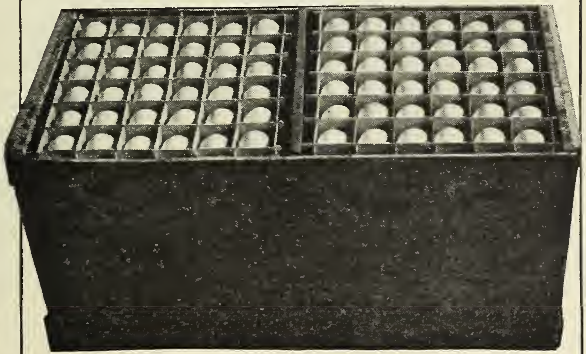

CONSTRUCTION AND PACKING OF AN EGG CASE

By GEORGE H. POWERS, *Assistant Marketing Specialist, Division of Dairy and Poultry Products, Bureau of Agricultural Economics*

The price that a buyer will pay for a case of eggs in a market is influenced not only by the appearance and quality of the eggs but by the soundness and appearance of the package. It is important, therefore, that producers, packers, and shippers of eggs employ the methods that give best results with containers, in regard to the construction of the case and the use of packing materials—fillers and flats. As an increasing number of producers pack and ship eggs, either individually or by groups, it is important that they use the best methods. The egg-receiving room of any produce firm that receives miscellaneous shipments of eggs direct from producers suggests the tremendous losses in the industry resulting from careless and indifferent methods of packing and the use of unsound packages and packing materials.

A 30-Dozen Egg Case

The dimensions of a " standard " 30-dozen egg case are:

	Outside	Inside
	Inches	*Inches*
Length	25⅞	24
Width	12⅛	11¾
Depth	12⅞	12½

This case is constructed of hardwood with a partition across the center dividing the case into two equal compartments, with a capacity of 15 dozen eggs each. The top, sides, and bottom must be not less than three-sixteenths of an inch in thickness, and there must be not more than two pieces in each. The center partition and the ends must be not less than seven-sixteenths of an inch thick. It is important that the centerpiece be placed exactly in the center of the case, making the two compartments of equal size, so the packing material will fit each end well and not be too tight or too loose. If the compartment is so small that the fillers must be crowded in, the eggs packed in them may be crushed, or it may be difficult to remove the fillers. If the compartment is too large, a shifting of the fillers may occur, and cracked eggs may result.

A carload of knockdown cases complete with fillers for the case consists of about 2,400 cases. The fillers are packed in nailed-up cases in which the center board has not been nailed in place. The knockdown parts are wired or strapped together, with 25 pieces of the same kind in a bundle—25 tops or 25 sides, etc. These are nailed up in case form as they are needed.

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In nailing a case together threepenny cement-coated nails are used. A flush-cleat case (fig. 1) should be nailed with 18 nails on each side (6 in each end and 6 in the center), 21 on the bottom (7 in each end and 7 in the center). The top is nailed with 4 nails in each end, driven into the case end, and not into the cleats.

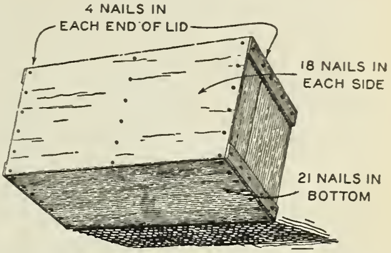


FIGURE 1.—In a properly constructed egg case threepenny cement-coated nails are used and the nails are spaced an even distance apart. The case is nailed as follows: 18 nails in each side; 21 nails in bottom; 8 nails in cover (4 in each end)

Forms Useful in Making Egg Cases

In making up the knockdown egg cases in large egg-packing plants, an egg-case machine is used to hold the ends and center board in their proper places while being nailed. With such a machine one man can make up 20 or more cases accurately in an hour.

A homemade egg-case form (fig. 2) can be made by a producer who is handy with tools and can be used to advantage to make up the knockdown cases. It is inexpensive to construct and simple to operate. Such a form can be owned by a group of farmers so that each producer in turn may use it to make up a supply of cases to last several weeks. Care should be taken in constructing this form to have each dimension accurate, so that the center and end boards will be in exact position.

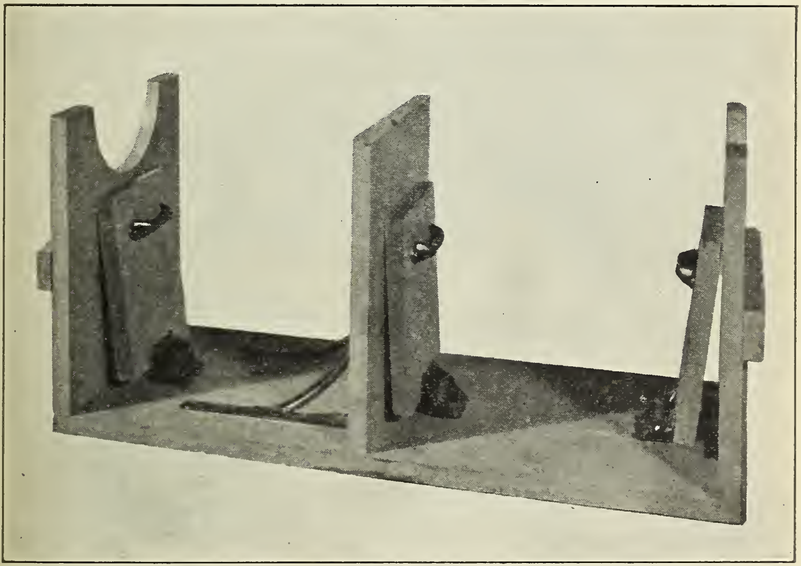


FIGURE 2.—A practicable homemade egg-case form

A list of the material required for its construction (fig. 3) and the approximate cost is as follows:

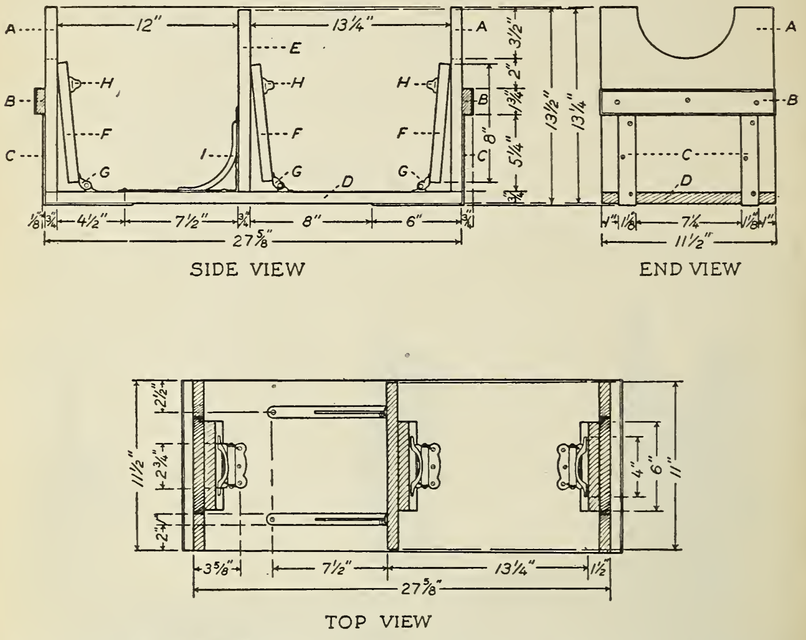
List of Materials and Approximate Cost

Ends:	
2 pieces, 12½ by 11½ by ¾ inches	$1.60
2 cleats, 11½ by 1¾ by ¾ inches	
Center: 1 piece, 12 by 11 by ¾ inches	
Bottom: 1 piece, 11½ by 27⅝ by ¾ inches	
Clamp boards: 3 pieces, 6 by 8 by ¾ inches	
3 door pulls commonly used on screen doors	.15
3 spring hinges commonly used on screen doors	$0.50
2 shelf brackets, 7½ by 8 inches	.25
4 pieces L-turned strap iron 1 inch wide, 12 inches long, bent in middle for end braces	.30
6, 1½-inch flat-headed screws	.20
66, ½-inch flat-headed screws	
Total approximate cost of materials	3.00

Construction of an Egg Case

In constructing an egg case with such a form the procedure is as follows:

The form is placed on a flat-top bench or table that provides a firm base. The two end boards and the center board are placed in the form (fig. 4) with the cleats on the outside of the ends. The grain in the wood of the center board should run across the case.



SIDE VIEW

END VIEW

TOP VIEW

FIGURE 3.—Plan of egg-case form for use in nailing up cases which are bought in knockdown form: A, End pieces; B, end cleats; C, strap iron and braces; D. bottom; E, centerpiece; F, clamp boards; G, screen-door hinges; H, door pulls; I, brackets

The bottom is next put in place and is nailed to the ends and center, by means of 7 nails in each, or 21 in all.

The form is then turned over, with its bottom toward the operator. (Fig. 5.) The side is nailed in place. Six nails are used in each end and in the center, or 18 in all. The form is then turned over, and the other side is nailed in place in the same way. (Fig. 6.)

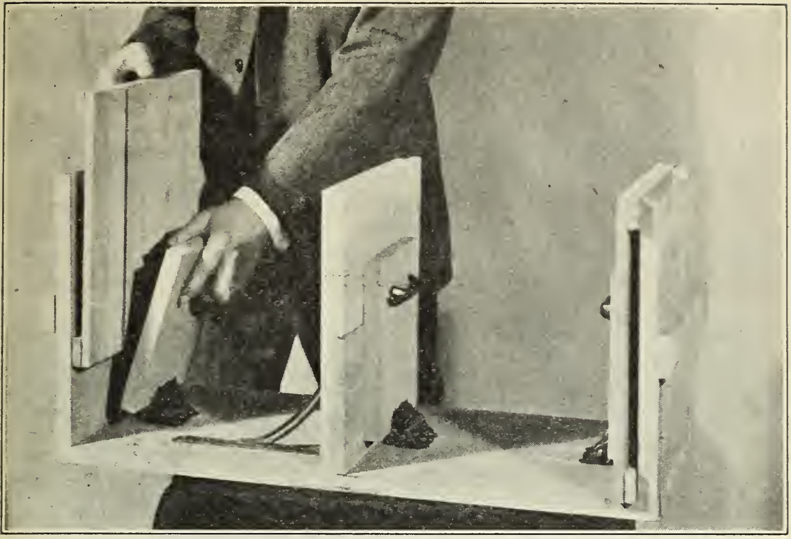


FIGURE 4.—Placing the ends of egg case and centerboard in form ready for nailing

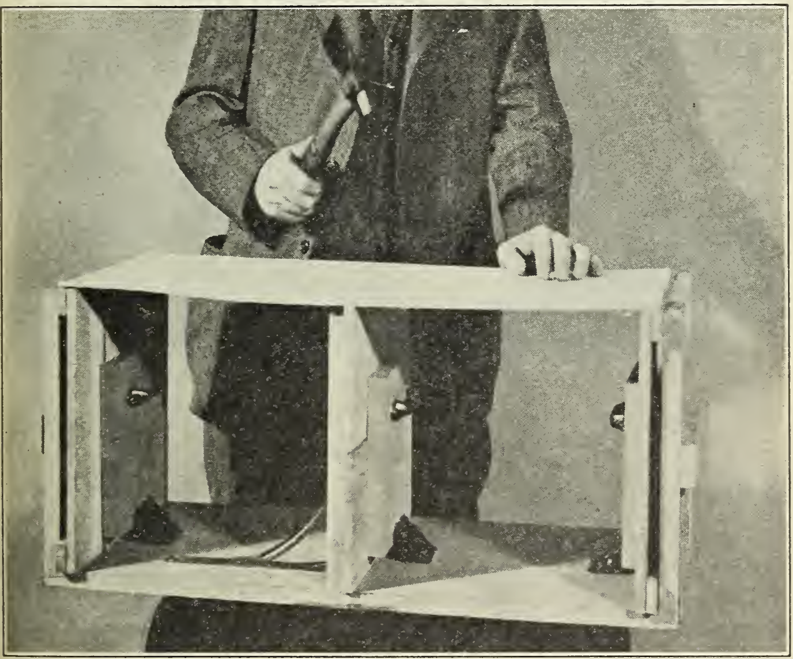


FIGURE 5.—Nailing on the bottom of the case as the case is in an inverted position in the form

The case is then removed from the form by turning the form right side up, grasping the case by the cleats at the notch in the end of the form, and giving the case a sudden jerk.

Packing Materials

The packing material used in the "standard" 30-dozen egg case consists of 10 honeycomb fillers, each holding 3 dozen eggs, and flats with or without pads, depending upon the style of pack.

Fillers

The ordinary honeycomb egg-case filler is 2¼ inches deep. It contains 36 cells arranged 6 in each of 6 rows. Five fillers, each holding 3 dozen eggs, are used in each compartment. The fillers are made of strawboard or of spruce pulpboard. Those of spruce pulpboard are white and are used by many shippers of white eggs.

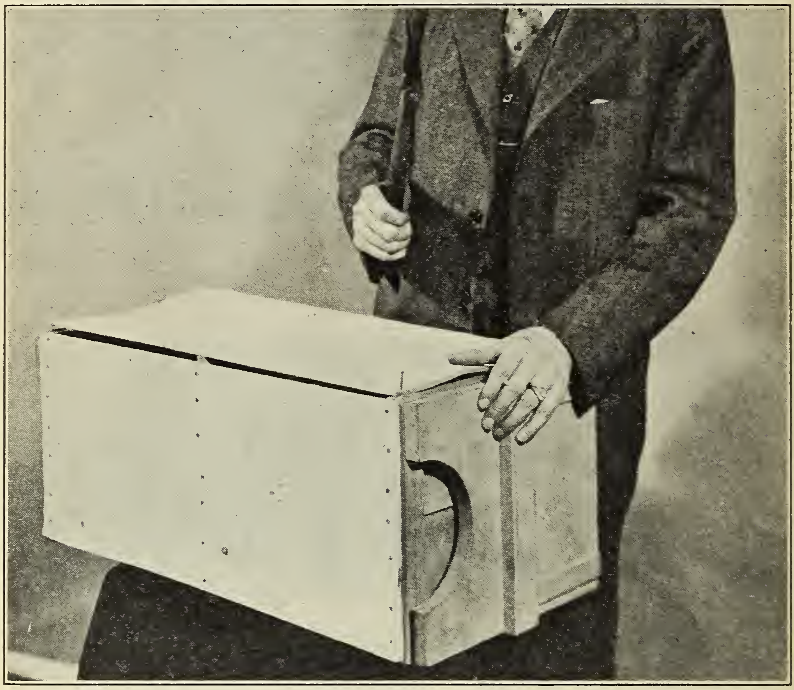


FIGURE 6.—Nailing on the side of the case after the form is turned on one side

When duck eggs are shipped in this kind of case, special fillers are used. They are like the standard fillers, except that the cells are larger and fewer in number. There are 25 cells in each filler, or 5 rows with 5 cells in each row. Fillers that are slightly deeper than standard are used to a limited extent in shipping extra large or extra long eggs.

Strawboard fillers.—Strawboard fillers should be of good weight, hard calendered in finish, and perfectly dry. Since they deteriorate in appearance and weaken from use they should not be used a second time.

Spruce pulpboard fillers.—The use of spruce pulpboard fillers and specially treated strawboard fillers is in favor for packing eggs to be held in cold storage, for they do not cause so great a development of the flavor that is characteristic of cold-storage eggs.

Flats

Flats are square pieces of cardboard or other material to be placed between the fillers to separate them. Plain flats are merely square pieces of strawboard or pulpboard that fit the egg-case compartment. Cup flats and various types of corrugated or cushion flats have been devised and are extensively used. During the last few years the cup and cushion flats have largely displaced the strawboard flats because of their reduction of damage in shipment.

Cup flats.—These are made from paper pulp pressed in a mold so that there is a raised ring and depression or "cup" for each egg to rest upon. The cup side of these flats should always be placed up. This type of flat prevents shifting and provides a cushion that tends to prevent checks when the egg is dropped into the filler.

Corrugated flats.—Usually corrugated flats consist of plain flats with corrugated calendered paper pasted on one side in strips or squares, with enough space between to allow the fillers to fit snugly in these interstices. The corrugated squares act as cushions for the eggs in the fillers and prevent shifting of the fillers.

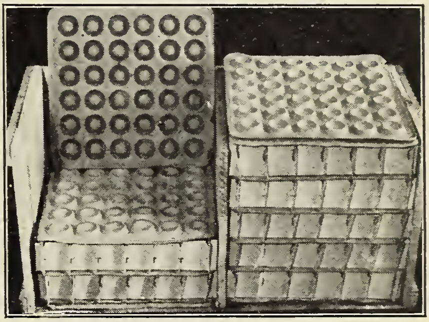


FIGURE 7.—A 16-cup-flat pack. Side removed for illustration

Other types of flats are on the market but are not in general use.

Cushions

Improved methods of packing to reduce breakage have brought excelsior pads into extensive use. These pads are about one-third of an inch thick and are made of excelsior wrapped with paper. They are the size of the bottom of the egg-case compartment, and for best results 6 of them are used in each case; 2 at the bottom, 2 on the top, and 2 underneath the top fillers.

Methods of Packing

There are various methods of packing eggs and of using packing materials. A tight pack prevents shifting of the fillers to the side or end of the case and protects the egg from unnecessary shaking and jolting that may cause a lowering of quality. The use of the tight pack has materially lowered the percentage of damage to eggs in transit within the last few years. Some of the most common and most widely used methods are described below.

A 16-cup-flat pack (fig. 7) is made by using eight cup flats in each of the two compartments of the case. Two cup flats are placed on the bottom and on the top of each compartment, the first with the cups down and the second with cups up. Some packers use 1 cup flat on top instead of 2, and this gives 14 instead of 16 cup flats. The 14-cup-flat pack is not as tight as the 16 and to that extent is not as desirable.

A 6-pad pack (fig. 8) is made by placing three excelsior pads in each of the two compartments, one on the top, one on the bottom, and one under the top filler. (Flats should not be used over the pads.) This type of pack has given satisfaction.

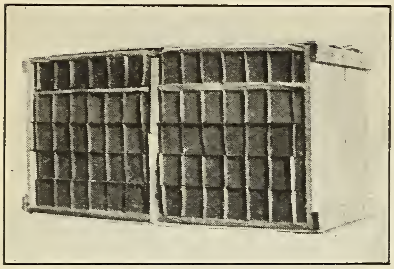


FIGURE 8.—A 6-pad pack. Side removed for illustration

A 4-pad pack is similar to the 6-pad pack except that pads are placed on the top and bottom only. This pack is not so tight a pack and should be used only with the cup or cushion flats.

If oversized fillers are used to accommodate oversized and long eggs, deeper cases should be used, as the pressure in standard cases would result in end crushing. Cases that are deeper than the standard cases can be bought at regular supply houses. The standard case can be deepened by nailing a strip one-fourth to three-eighths of an inch thick on the ends of the cases to raise them up.

After any pack is completed the top is nailed on with four nails at each end, or eight in all. The top should not be nailed in the center.

A properly packed case of eggs, with the top and cushions removed, is shown on the title-page.

Precautions in Use of Secondhand Cases

If a secondhand case is to be used, it should be examined carefully before being packed to see that it is in good condition. A case that is not in good condition should not be used. If the case is usable it should be renailed wherever renailing is needed. It should be wired or strapped on each end for shipping as follows: Before the lid is nailed on twist the end of a piece of wire around a nail and drive the nail partly into the end board, near the side of the case, where the top will cover it later. (Fig. 9.) Draw the wire over to the side and twist it around another nail. Repeat this operation until the wire is nailed three times on each side and three times on the bottom. Then draw the wire over the corner on the opposite side from the starting point and fasten it by twisting it around a nail and driving the nail down. If a tin or metal strap is used, nails should be similarly placed.

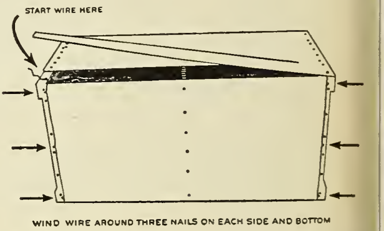


FIGURE 9.—Best way to wire an egg case. Only secondhand cases require wiring

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